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ABSTRACT

The National Longitudinal Transition Study (NLTS) of Special Education Students provides ongoing information to the special education community regarding the transition of youth with disabilities from secondary school to early adulthood. The sample for the study began with a 1987 survey (Wave 1) involving more than 8,000 youth from the national population of secondary special education students. These subjects were again surveyed in 1990-91 (Wave 2). This report describes the data collection instruments and procedures used in Wave 2 of the NLTS. Data collection components for Wave 2 included parent/youth telephone interview and mail questionnaires (n=6,684), school transcripts (n=4,057), summaries of school programs, a school program survey, and a school background survey. Analysis centers on Wave 2 weighting, both in comparison to Wave 1 and in reference to specific samples for secondary program analysis, school services analysis, overall dropout analysis, estimated dropout analysis, school program survey analysis, analysis of trends in postschool outcomes, analysis of vocational rehabilitation services to out-of-school youth, service provision for out-of-school youth, and the contribution of school experiences to postschool outcomes. Analysis also details implications of the nonresponse bias. (DB)

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REPORT ON SAMPLE DESIGN, WAVE 2 (1990)

A Report from the National Longitudinal Transition Study of Special Education Students

November 1993

Prepared for:

The Office of Special Education Programs
U.S. Department of Education

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National Longitudinal Transition Study

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Prepared by:

Harold Javitz
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1 OVERVIEW

This report documents the sample design of the second wave of the National Longitudinal Transition Study of Special Education Students (NLTS) and examines nonresponse bias. This overview describes the role of this report in the NLTS methodology report series, describes the purposes of the NLTS, and summarizes major NLTS survey components and the type of information obtained from each component.

Methodology Reports

This report is the fourth and last in a series of methodology reports documenting procedures used to obtain and analyze nationally representative data concerning the transition of secondary school students with disabilities to early adulthood. The two reports from the first wave of data collection are:

- *Report on Procedures for the First Wave of Data Collection (1987)* describes the data collection instruments and procedures used in wave 1 (Wagner, Newman, and Shaver, 1989).
- *Report on Sample Design and Limitations, Wave 1 (1987)* describes the procedures used to define the sampling frame, select the sample, and compute sample weights used in wave 1 (Javitz and Wagner, 1990). This report also addresses issues of nonresponse bias and includes an overall assessment of data usefulness.
- Analogous reports are being issued for wave 2:
- *Report on Procedures for the Second Wave of Data Collection (1990)* describes the data collection instruments and procedures used in wave 2 (Marder, Habina, and Prince, 1992).
- *Report on Sample Design, Wave 2 (1990)* describes the procedures used to define the sample and compute sample weights used in wave 2 and addresses issues of nonresponse bias (Javitz and Wagner, 1993).

NLTS Study Purpose

The National Longitudinal Transition Study of Special Education Students was mandated by the U.S. Congress in 1983 to provide information to practitioners, policymakers, researchers, and others in the special education community regarding the transition of youth with disabilities from secondary school to early adulthood. The Office of Special Education Programs (OSEP) of the U.S. Department of Education contracted with SRI International to develop a design, develop and field-test data collection instruments, and select a sample of students for a study that would meet the congressional mandate. In April 1987, under a separate contract, SRI began the actual study.

The sample for the NLTS involves more than 8,000 youth representing the national population of students in secondary special education in the 1985-86 school year who were at least 13 years old. The sample was drawn so that findings generalize to students in secondary special education in 1985-86, both as a whole and for those in each of the 11 federal special education disability categories separately. Data were first gathered in 1987 (referred to as wave 1) and again in 1990-91 (referred to as wave 2), so that youths' patterns of experiences through secondary school and into their early adult years could be charted. (Additional data were collected in two substudies for particular subsets of youth from the sample in 1989 to address particular research questions for those subsamples.)

The study addresses both descriptive and explanatory research questions. The focus of description is to understand better the patterns of experiences of youth, both in secondary school and in the transition to adulthood. The primary explanatory research questions involve identifying factors that contribute to the effective transition of youth with disabilities from secondary school to employment, further training and education, and independent living. Of particular interest is identifying what schools can do in the way of programming, staffing, organization, or other means to facilitate a successful transition.

Wave 1 Study Components

Wave 1 had four major study components:

- **The parent interview**. The parents/guardians of sample youth were administered a structured interview by telephone in the summer and fall of 1987 to obtain information on youths' individual and family characteristics; services received; social integration; outcomes in the areas of employment, education (including postsecondary education), and independence; and parent expectations of future achievements.

- **Abstraction of data from school records.** School or district staff were recruited in the 1987-88 school year to abstract data from school records for the most recent year youth were in secondary school (either 1986-87 or 1985-86) and to record the data on forms provided by SRI. School record data concerned the disabilities for which youth received special services, grade level in school, educational setting, courses taken, grades received (if in a graded program), related services provided, attendance, IQ, minimum competency test experiences, and end-of-year status (i.e., dropped out, graduated, promoted to next grade level).

- **The survey of secondary special education programs.** A mail questionnaire was sent to the principals of the secondary school most recently attended by each youth. The first part of the questionnaire related to general characteristics of the school and its student body and was usually completed by the principal. Later sections of the questionnaire related to specific kinds of services and instruction provided to secondary special education students (e.g., life skills training, job skills training) and were usually completed by special education personnel. The later sections also addressed community resources for persons with disabilities.

- **The nonresponse study.** In survey research, there is always a concern that respondents to a survey differ systematically from nonrespondents, thereby introducing bias into the survey data. To determine whether bias existed in the parent/guardian telephone interview data, in-person interviews were conducted with a sample of parents/guardians that had not been reached by telephone. These parents/guardians were administered a slightly simplified version of the parent/guardian telephone survey. By comparing the sample of nonrespondents with parents/guardians who had responded to the telephone survey, bias in the sample was identified and at least partially adjusted for.

Further information about the content of these questionnaires and the procedures used to collect the data (including procedures for encouraging response) is available in the NLTS *Report on Procedures for the First Wave of Data Collection (1987)* (Wagner, Newman, and Shaver, 1989).

The results of the wave 1 data collection efforts are summarized in Table 1. Other details concerning the data collection response rates are available in the *Report on Sample Design and Limitations, Wave 1 (1987)* (Javitz and Wagner, 1990).

Wave 2 Study Components

Wave 2 had five major study components:

- **The parent/youth telephone interview and mail questionnaires.** The parents/guardians of sample youth and, in many cases, the youth themselves were administered a structured interview by telephone in the fall/winter of 1990-91 to obtain information on services received by youth and outcomes in the areas of employment, education, and independence. Many of the items in the interview were similar or identical to items in the wave 1 parent interview, enabling the NLTS to examine the experiences of youth over time. When the respondents were unable or unwilling to be interviewed by telephone, they were sent mail questionnaires containing selected items from the telephone interviews. There were three potential components to the wave 2 parent/youth questionnaire:

  - Part 1 of the interview contained questions about the youth's receipt of services and ability to perform certain activities (e.g., go to a public library or community swimming pool). In pretests, youth had been found not to be accurate reporters of service receipt, underreporting services received and misreporting sources of services. Thus, the desired respondent for questions concerning services and for evaluations of the youth's abilities was an adult who was knowledgeable about the youth, generally a parent or guardian. Part 1 was never administered to youth; if a parent/guardian or other appropriate adult was unavailable, Part 1 was not administered.

  - Part 2 of the interview contained questions that youth had been able to respond to accurately in the pretests, in addition to perceptual questions, such as job satisfaction, for which the youth was the only appropriate respondent. Thus, the youth was the preferred respondent for Part 2 unless the Part 1 respondent reported that disability or some other factor would

Table 1

WAVE 1 DATA COLLECTION RESULTS FOR STUDENT SAMPLE BY HANDICAPPING CONDITION

Status	Total	Learning Disabled	Emotionally Disabled	Speech Impaired	Mentally Retarded	Visually Impaired	Hard of Hearing	Deaf	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped	Deaf/ Blind
Number of youth sampled[1]	12,833	1,650	1321	893	1,642	1,318	1,372	1,275	1,060	1,005	1,132	165
Sufficent data for weighting[2]	8,404	1,190	779	587	1,204	874	770	918	763	475	744	100
Among weighted respondents												
Parent interview only	1,190	165	119	81	158	92	119	125	130	86	106	9
Parent and record abstract only	212	32	32	14	46	7	11	9	21	14	25	1
Parent and school program only	989	131	103	86	111	134	88	79	75	83	80	19
Record abstract only	223	39	40	15	52	14	11	10	18	7	17	0
Record abstract and school program only	1,047	170	94	80	219	106	69	104	72	29	91	13
Parent interview, record abstract, and school program	4,743	653	391	311	618	521	472	591	447	256	425	58
Total parent interviews[3]	7,134	981	645	492	933	754	690	804	673	439	636	87
Total record abstracts	6,225	894	557	420	935	648	563	714	558	306	558	72
Total school program	6,779	954	588	477	948	761	629	774	594	368	596	90

1 Of the 12,833 youth who were sampled, 43 were later found to be deceased. Of the remaining 12,786 youth who were eligible for the sample, the school districts that were contacted did not provide location information to SRI for 1,632 youth because the consent form was not returned by the parent or guardian. For an additonal 636 youth the location information that was provided was inaccurate and SRI was unable to locate these parents or guardians by mail or telephone. Thus, the parents or guardians of only 10,369 youth out of the 12,933 sampled (e.g., 80.2%) were available for interview.

2 Youth who were weighted had a parent interview or a record abstract.

3 Includes 255 parent interviews that were only partially completed but contained sufficient information for weighting.

prevent the youth from responding. In such cases, the Part 1 respondent was the preferred respondent for Part 2. Because of this variation in Part 2 respondents, two alternative versions of Part 2 were constructed: "Part 2A: Parent Continuation" and "Part 2B: Youth Continuation." These two versions were almost identical except that perceptual questions of satisfaction with such aspects of life as jobs and living arrangements were included only in the youth continuation section.

- Part 3 of the interview was administered only to parents/guardians of the approximately 600 youth for whom some parent information was obtained in wave 2 interviews/mail questionnaires but for whom there had been no wave 1 interview. This part of the interview gathered important background information, such as questions about the youth's ethnicity, household income, and assessments of the youth's functional abilities, that had been collected in the wave 1 interviews. Because it asked for assessments of the youth's abilities, Part 3 was administered only to parents/guardians, not to youth.

- Abbreviated mailed questionnaires to parents/guardians or youth were used to obtain key information from Part 1 and Part 2 of the telephone questionnaires when telephone interviews were not feasible (e.g., no telephone number was available, the youth was deaf, or the parent/guardian indicated that they would not complete a telephone interview but would complete a mail survey).

- **School transcripts.** The school transcript component obtained transcript information for students who had attended secondary school since the 1986-87 school year. Youth who had left secondary school in 1986-87 or earlier were excluded from the transcript component because it was considered burdensome for schools to access records from more than 4 years previously. We sought transcripts for students' 9th through 12th grades, or whichever of those grades had been completed by the 1991 school year. A one-page instruction sheet specified how to annotate the transcripts to provide additional information needed for the NLTS. The five areas needing annotation involved marking all special education classes, explaining abbreviations of class names or other notations, identifying classes that included school-sponsored work experience, specifying the grade level for each year, and entering absentee information on the transcript cover sheet if it did not appear on the transcript itself. Because transcripts for youth who were currently enrolled in school would be incomplete (not containing information about the current term), we attached a second page to the transcript cover sheet requesting a list of the youth's current classes.

- **School program content form.** A one-page form was designed to summarize school programs that were not recorded in typical transcript form. Data regarding the student's school program in the most recent school year were generally abstracted by a current or former teacher from IEPs and recorded as the percentage of the student's instructional time that was spent in particular content areas. The six key areas were: academics, life skills, general

vocational exploration, specific vocational skills training and work experience, nonacademic and nonvocational activities, and disability support services.

- **School program survey.** This survey was designed to be completed by teachers or counselors of students enrolled in the 1990-91 school year about student academic background and current in-class performance. The survey covered such topics as outside services, transition planning, parent involvement, and diagnostic test results. In-class performance items were organized into three sections so that the school staff member could describe the youth's performance in regular education academic classes, special education academic classes, and regular education vocational classes.

- **School background survey.** This brief survey was mailed to each school attended by youth in the sample at the time of data collection. It obtained general information such as school population, ethnic composition, and type of school. One data collector was chosen from each school to receive this survey when there was more than one youth from the study currently enrolled at the school.

The results of the wave 2 data collection efforts are summarized in Table 2.

Table 2

WAVE 2 DATA COLLECTION RESULTS FOR STUDENT SAMPLE BY HANDICAPPING CONDITION

Status	Total	Learning Disabled	Emotionally Disabled	Speech Impaired	Mentally Retarded	Visually Impaired	Hard of Hearing	Deaf	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped	Deaf/ Blind
Number of youth sampled[1]	12,833	1,650	1,321	893	1,642	1,318	1,372	1,275	1,060	1,005	1,132	165
Completed parent part 1 Interviews	6,280	867	521	389	863	661	624	783	548	361	565	98
Completed telephone	5,828	813	480	361	784	627	572	722	515	338	528	88
Completed mail	452	54	41	28	79	34	52	61	33	23	37	10
Completed parent part 2A interviews	3,882	363	265	169	619	222	366	780	254	187	559	98
Completed telephone	3,430	309	224	141	540	188	314	719	221	164	522	88
Completed mail	452	54	41	28	79	34	52	61	33	23	37	10
Completed youth part 2B interviews	2,931	536	285	244	285	479	373	203	330	187	9	0
Completed telephone	2,584	528	282	236	266	472	274	8	324	185	9	0
Completed mail	347	8	3	8	19	7	99	195	6	2	0	0
Completed part 2A or 2B interviews	6,813	899	550	413	904	701	739	983	584	374	568	98
Partially completed Parent 1, Parent 2A, or Youth 2B interview[2]	210	30	28	13	29	13	22	27	20	16	10	2
Parent part 3 interviews[3]	473	57	34	31	87	65	45	62	25	29	31	7
Number of youth sampled	12,833	1,650	1,321	893	1,642	1,318	1,372	1,275	1,060	1,005	1,132	165
School transcripts[4]	6,210	943	560	425	920	650	627	750	552	338	392	53
Completed school program content form[5]	443	4	11	7	95	49	2	33	22	19	170	31
School program survey[6]	1,089	189	95	118	203	72	70	65	76	54	134	13
School background survey[7]	6,712	932	563	455	946	724	644	821	598	372	560	97

1 Of the 12,833 youth who were sampled, 43 were later found to be deceased. Of the remaining 12,786 youth who were eligible for the sample, the school districts that were contacted did not provide location information to SRI for 1,632 youth because the consent form was not returned by the parent or guardian. For an additonal 636 youth the location information that was provided was inaccurate and SRI was unable to locate these parents or guardians by mail or telephone. Thus, the parents or guardians of only 10,369 youth out of the 12,933 sampled (e.g., 80.2%) were available for interview.

2 These respondents provided partial information for one or more portions of the parent part 1, parent part 2A, or youth part 2B interviews.

3 These interviews were only administered to parents/guardians who had not completed the background section of the Wave 1 Parent/Guardian interview

4 Transcripts for one or more school years; some transcripts gathered in Wave 1 data collection effort.

5 Only applicable to youth who had programs that were not administered in typical transcript form. The school program content form only addressed the most recent school year of these youth.

6 Only applicable to youth who were in school in 1990-91.

7 General school data obtained via this survey were associated with the students who last attended those schools. A respondent may have a school background survey from the Wave 1 data collection effort and/or the Wave 2 data collection effort.

2 WEIGHTING

Wave 1 Weighting

The procedures used to weight the wave 1 data are described in detail in *Report on Sample Design and Limitations, Wave 1 (1987)* (Javitz and Wagner, 1990). The objective of that weighting was to obtain weights that would project the wave 1 respondents to the nationwide population of students with disabilities. Factors that were considered in that weighting approach included the following:

- The sampling design for local education agencies (LEAs). The LEA universe was stratified according to geographic region (i.e., Northeast, Southwest, Central, and West/Southwest), 4 levels of district wealth, and 6 levels of district size (e.g., the number of students served). In addition, we defined a supplementary stratum of 84 state-operated schools serving secondary special education students who were deaf or blind. Different sampling fractions were used to obtain the sample from each different strata, and different response rates were obtained.
- The sampling design for students with disabilities. The universe of students with disabilities within each LEA was stratified according to type of disability (i.e., the 11 federal special education disability categories in use at the time) and student age. Different sampling fractions were used, depending on the stratum and on the size of the LEA.
- A special in-person survey was conducted to obtain information from parents/guardians who could not be contacted by telephone. These data were the basis for our best estimate of the responses that would have been provided by nonrespondents to the telephone survey. Data from this survey (in conjunction with other telephone survey data) were used to calculate expected marginal frequencies on key variables, such as household income.

Initial weights for the telephone and in-person surveys were calculated with the traditional probability approach (i.e., respondents were weighted inversely to their probability of selection). However, this procedure, if not modified, would have resulted in undesirably large weights being assigned to the in-person respondents. Consequently, we used the initial weights to calculate marginal distributions on key variables (such as household income) and then reweighted the respondents (using the Deming algorithm) so that the newly defined weights replicated these marginal distributions.

Wave 2 Weighting Overview

The weighting for wave 2 was simplified because of the existence of the wave 1 weights. The basic approach for wave 2 weighting was as follows:

1. We identified the population to which we wanted to extrapolate (or project) the analysis results. This was accomplished implicitly by identifying those wave 1 respondents with sampling weights that best matched the population that we wanted to consider. For example, in analyzing youth who graduated from school, we identified all of the wave 1 youth with a sampling weight who

graduated from school. Information concerning whether the youth had graduated could come from any source of information (including wave 2 interviews or transcripts).

2. Using the wave 1 weights of the youth identified in step 1, we generated marginal distributions on key demographic variables. These were our best estimates of the marginal distributions on these variables for the universe to which we want to extrapolate the analysis results. The principal variables used in these marginal distributions were as follows:
   - Age (the primary categories were 15 to 17 old, 18 to 22 years, and 23 years and older).
   - Ethnic background (the primary categories were African American; Hispanic; white; and a combined category for Indian/Alaskan, Asian/Pacific Islander, or other).
   - School completion status (the primary categories were graduated; aged out; and a combined category of dropped out, left school, suspended, or expelled).
   - Gender.
   - Household income in 1986 (or 1990 if 1986 data were not available). The primary categories were under $12,000; $12,000 to $19,999; $20,000 to $24,999; under $25,000 but not otherwise specified; $25,000 to $37,999; $38,000 to $50,000; and over $50,000. Those with incomes of $25,000 or over but otherwise unspecified were grouped with those with household incomes between $25,000 and $37,999. In addition, there was a category for those with missing information (typically because a parent interview was not available) and a category for those who responded "don't know," refused to answer, or indicated that the youth was institutionalized.
   - Disability category.
3. We identified the youth from either wave 1 or wave 2 who best matched the population criteria used in step 1 to identify the universe to which we wanted the analysis results to extrapolate. Continuing our example, this would be any youth in our respondent base who graduated. Such youth might not have a wave 1 weight. For example, there were approximately 950 youth who had a wave 2 interview but not a wave 1 interview, and some of these youth would have graduated from high school.
4. We identified the subset of youth from the preceding step who had the data necessary to conduct the analysis. For example, we might require a 12th-grade transcript from a youth who graduated from high school in order to conduct the analysis.
5. Using Deming's algorithm, we weighted the youth identified in step 4 so that they replicated as closely as possible the marginal distributions obtained in step 2.

Specific Wave 2 Weighting Analyses

A variety of different analyses of wave 2 data were planned, requiring that different universes and samples be defined and different weights calculated. The definitions of the universes and samples are provided below.

Secondary School Program Analysis

The objective of this analysis was to provide a comprehensive picture of the secondary school programs of students with disabilities (Wagner, 1993). The analysis includes classes in ungraded programs or graded programs from the 9th grade onward and excludes classes taught in special schools. We also excluded students who were in secondary school but were too old to have recently received special education classes (e.g., students who were older than 21 were not eligible to receive special education from the schools).

The *universe* consisted of all youth who satisfied the following conditions:

1. The youth was in a regular secondary school in 1985-86 or 1986-87.
2. As of 1986-87 or earlier, the youth's oldest age while in school was 23 years or younger.
3. If the youth was suspended, was expelled, or dropped out at any time up to and including 1986-87, the youth was in 9th grade or higher or was in an ungraded program when this occurred.

The *sample* consists of all youth who satisfy the following conditions:

1. The youth was in a regular secondary school at some time between 1985-86 and 1990-91, inclusive.
2. The youth's oldest age in school in any year up to and including 1990-91 was 23 years or younger.
3. The youth's grade level was limited to 9th, 10th, 11th and/or 12th, or ungraded.
4. The youth had a transcript, a school content form, or a school record abstract form.

School Services Analysis

The objective of this analysis was to describe the services received by youth either inside or outside of the school setting, but while still a student (Cameto, 1993). Services included occupational therapy, counseling, physical therapy, speech therapy, and vocational training.

The *universe* was defined identically to the secondary school program analysis universe.

The *sample* consisted of all youth who satisfied the following conditions:

1. The youth was in a regular secondary school at some time between 1985-86 and 1990-91, inclusive.
2. The youth's oldest age in school in any year up to and including 1990-91 was 23 years or younger.
3. The youth's grade level was limited to 9th, 10th, 11th and/or 12th, or ungraded.

4. The youth had a transcript, a school content form, or a school record abstract form, and one of the following:

   (a) A wave 1 school record abstract, a wave 2 school program survey, and/or a wave 2 school content form.

   (b) A wave 1 parent interview if youth was still in school in 1986-87 or if the youth was out of school a year or less in 1986-87.

   (c) A Part A wave 2 parent interview if the youth was still in school in 1990-91 or out of school a year or less in 1990-91.

Overall Dropout Analysis

The objectives of this analysis was to examine the course-taking and performance measures of youth and determine whether there was a difference between youth on the basis of their known completion status (Wagner, Blackorby, and Hebbeler, 1993). In particular, we wanted to determine differences between those who were suspended, were expelled, or dropped out, and those who graduated or aged out.

The *universe* was defined identically to the secondary school program analysis universe.

The *sample* consisted of all youth who satisfied the following conditions:

1. The youth was in a regular secondary school during at some time between 1985-86 and 1990-91, inclusive.
2. The youth's oldest age in school in any year up to and including 1990-91 was 23 years or younger.
3. The youth must have either graduated, aged out, been suspended/expelled, or dropped out of high school by 1990-91 (i.e., not still be in school or have an unknown school completion status).

Estimated Dropout Analysis

The objectives of this analysis were to calculate the dropout rate for each grade, and to determine the relative importance of such factors as grades and absenteeism on the dropout rate (Wagner, Blackorby, and Hebbeler, 1993).

The *universe* was defined identically to the secondary school program analysis universe.

The *sample* consists of all youth who satisfy the following conditions:

1. The youth was in a regular secondary school at some time between 1985-86 and 1990-91, inclusive.
2. The youth's oldest age in school in any year up to and including 1990-91 was 23 years or younger.
3. The youth must have been in 7th through 12th grade or ungraded at some time from 1985-86 through 1990-91, inclusive, and we knew the grade (or ungraded status) of the youth in that year.

4. The youth's school completion status as of 1990-91 must be anything except unknown (e.g., it is acceptable if the youth was still in high school).

School Program Survey Analysis

The objectives of this analysis were to analyze teachers' assessments of students' abilities and comportment and descriptions of the students' classroom environment, and to relate these factors to students' performance (Blackorby, forthcoming). Teachers provided assessments of the youth's reading and math ability, how the youth behaved in class, the size of the class, the number of special and regular education students, what type of support was available to the student and teacher when the youth was in a regular education class, etc. The analysis consisted of a description of teacher responses, a comparison of behavior measures to transcript results (e.g., GPA and absenteeism), and an analysis of the factors that influence GPA performance. For the most part, this analysis was conducted on responses for 12th-graders.[1]

The *universe* consisted of all youth who satisfied the following conditions:

1. The youth was in a regular secondary school in 1985-86 or 1986-87.
2. As of 1986-87 or earlier, the youth's oldest age while in school was 23 years or younger.
3. If (a) the youth was in a graded program in the years in which we collected the student record abstracts (in wave 1), (b) the youth was also in a graded program in the youth's last year of school (in 1990-91 or earlier), and (c) the youth left high school in 1990-91 or earlier, then the youth's school completion status was not suspended, expelled, or dropped out.[2]
4. If the youth was in an ungraded program in the years in which we collected the student record abstracts (in wave 1) or in an ungraded program in the youth's last year in school (in 1990-91 or earlier), then the youth was between the ages of 17 and 23 in the last year of school (in 1990-91 or earlier).

The sample consists of all youth who satisfy the following conditions:

1. The youth was in a regular secondary school at some time between 1985-86 and 1990-91, inclusive.
2. The youth's oldest age in school in any year up to and including 1990-91 was 23 years or younger.
3. The youth had a school program survey.
4. The youth was in the 12th grade or an ungraded program at the time that the wave 2 school program survey was completed. [The wave 2 school program survey was administered in 1989-90 to youth who satisfied two conditions: (a)

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1 It was intended that this analysis exclude 12th-graders who dropped out or were suspended or expelled. These youth were excluded from the universe but inadvertently included in the sample. However, only about 3.4% of 12th graders with a school program survey were in this category, and therefore the effect of including them in the sample was small.

2 This criterion excluded youth who were in 12th grade in early 1990-91 and subsequently left school in 1990-91 because they were suspended, expelled, or dropped out. This small group was not excluded from the sample.

they were in the In-School Substudy, and (b) on the basis of their wave 1 data it appeared that their last year in school would be 1989-90. The wave 2 school program survey was administered in 1990-91 for all youth for whom it appeared, on the basis of their wave 1 data, that their last year of school would be 1990-91.]

5. If the youth was in an ungraded program at the time of his/her school program survey, then the youth was between the ages of 17 and 23, inclusive, at that time.

Analysis of Trends in Postschool Outcomes

The objective of this analysis was to analyze the longitudinal employment and postsecondary educational, social and residential experiences of youth who were out of school for at least 3 years. (In Wagner, M., et. al. (1992). *What happens next? Trends in postschool outcomes of youth with disabilities.)* We therefore defined the universe to be youth who were out of secondary school in wave 1 (up to 2 years out of school). The sample that we wanted to weight to this universe was youth who were out of school in 1987 and for whom we had wave 2 interviews.

The *universe* consisted of all youth who satisfied the following conditions:

1. The youth was enrolled in special education at a secondary school in the 1985-86 school year.
2. The youth had left secondary school by September 1987.

The *sample* consisted of all youth who satisfied the following conditions:

1. The youth was enrolled in special education at a secondary school in the 1985-86 school year.
2. The youth left secondary school by September 1987.
3. The youth's parent or guardian completed a wave 1 interview.
4. Either the parent or the youth completed a wave 2 Part A or Part B interview.

Analysis of Vocational Rehabilitation (VR) Services to Out-of-School Youth

The objective of this analysis was to analyze the experiences of youth who had received VR services (Hayward and Wine, 1993).

The universe consisted of 719 youth who had wave 1 weights and who satisfied the following conditions:

1. The youth had left school by 1987.
2. The youth's school completion status was graduated, aged out, or dropped out, suspended, or expelled.
3. The youth's age in 1987 was 16 years or older.
4. The youth had had contact with a VR agency at the time of the wave 1 interview or the Exiter Substudy.

The sample consisted of 196 youth who satisfied the following conditions:

1. The youth had left school by 1987.
2. The youth's school completion status was graduated, aged out, or dropped out, suspended, or expelled.
3. The youth's age in 1987 was 16 years or older.
4. The youth had had contact with a VR agency at the time of the wave 1 interview or the Exiter Substudy.
5. The youth was part of a special VR substudy, and the VR case records of the youth had been located.

Service Provision for Out-of-School Youth

The objectives of this analysis (Marder, 1993) were to examine: (1) the level of perceived need for services during the first 5 years after secondary school; (2) what youth and family characteristics were associated with perceived need for services; (3) whether the need for services changed with time out of school; (4) what youth and family characteristics were associated with receipt of services; (5) whether the extent of service receipt changed with time out of school; (6) what was being done to obtain services for youth who were reported to need them but were not receiving them; (7) whether students with transition plans were more likely to receive needed services; 8) and whether the inclusion of particular individuals in the transition plan or the contacting of particular agencies as part of the transition plan resulted in a higher likelihood of needed service provision. Services included career counseling, job skills training, vocational education, life skills training, occupational therapy, tutors, readers, interpreters, personal counseling, activity centers, and residence in group homes.

The *universe* consisted of all youth who satisfied the following conditions:

- The youth was out of secondary school by 1990.
- The youth was a special education student in secondary school in the 1985-86 school year and was between the ages of 13 and 21.
- The *sample* consisted of the 5052 youth who satisfied the following conditions:
- The youth was out of secondary school by 1990.
- The youth was a special education student in secondary school in the 1985-86 school year and was between the ages of 13 and 21.
- The youth had a parent/guardian wave 2 Part A interview.

Employment Experiences of Youth with and without VR Contact

The objective of this analysis was to compare the 1990 employment rates for youth who had received VR services and those who had not, to determine whether VR services had been effective (Wine, Hayward, and Wagner, 1993). Employment information for 1990 was available only in the wave 2 questionnaire; therefore, both groups were restricted to youth who had a wave 2 questionnaire.

The purpose of weighting for this analysis was different than for other analyses. Rather than weighting a group to represent a universe, we used weighting to equalize the marginal distributions of two groups on potential explanatory variables (ethnicity, household income, school completion status, etc.). This allowed us to compare employment rates without having those rates be influenced by the otherwise unequal marginal distributions. Because the group of youth with VR case data was smaller than the group without VR case data, we chose to weight the latter group to achieve the unweighted marginal distributions of the former group.

In this case, the unweighted group (which, for weighting purposes, corresponds to the "universe") consisted of 148 youth who satisfied the following conditions:

- The youth had left school by 1987.
- The youth's school completion status was graduated, aged out, or dropped out, suspended, or expelled.
- The youth's age in 1987 was 16 years or older.
- The youth's VR status was VRBOB = 4 to 8 or EVTS = 1.
- The youth was part of a special VR substudy, and the VR case records of the youth had been located.
- The youth's employment data from 1990 were available from the wave 2 questionnaire.

The group for whom weights were calculated (which, for weighting purposes, corresponds to the "sample") consisted of 1,132 youth who satisfied the following conditions:

- The youth had left secondary school by 1987.
- The youth's school completion status was graduated, aged out, or dropped out, suspended, or expelled.
- The youth's age in 1987 was 16 years or older.
- The youth's employment data from 1990 were available from the wave 2 questionnaire.

Because the unweighted group did not include any deaf-blind students, weights for 14 deaf-blind students were set to zero, effectively excluding them from the second group.

The Contribution of School Experiences to Postschool Outcomes

The objectives of this analysis (Wagner, Blackorby, Cameto, and Newman, 1993) were to explore the multiple relationships that exist between postschool outcomes, characteristics of youth and their families, aspects of their secondary schools and school programs, their outcomes and achievements while in school, and the services or support they receive after leaving school. The focus was on the aspects of youths' experiences that were subject to change by policymakers, educators, service providers, parents, and/or youth that would improve the chances that youth would make a successful transition out of secondary school.

Two samples were used for this investigation—a main sample and a subset sample. Each sample extrapolates to a slightly different universe, referred to as the main universe and the subset universe.

The *main universe* consisted of all youth who satisfied the following conditions:

1. The youth was age 13 to 21 in the 1985-86 school year.
2. The youth was in special education in secondary school in the 1985-86 school year.
3. The youth was in secondary school in 1987.
4. The youth was out of secondary school in 1990.
5. The youth was not living in an institution in 1987 or 1990.

The *main sample* consisted of all youth who satisfied the following conditions:

1. The youth was age 13 to 21 in the 1985-86 school year.
2. The youth was in special education in secondary school in the 1985-86 school year.
3. The youth was in secondary school in 1987.
4. The youth was out of secondary school in 1990.
5. The youth was not living in an institution in 1987 or 1990.
6. The youth had a wave 1 parent interview and a wave 2 parent/youth interview.
7. The youth had a wave 2 Part A or Part B interview.
8. The youth had either a complete secondary school transcript (i.e., data up to and including the year the student left secondary school) or a school program content form.

The *subset universe* consists of all youth who satisfy all the conditions for being part of the main universe and in addition satisfy the following conditions:

1. The youth's disability classification was learning disabled, speech impaired, seriously emotionally disturbed or mildly/moderately mentally retarded.
2. The youth graduated or aged out of school.

The *subset sample* consists of all youth who satisfy all the conditions for being part of the main sample and in addition satisfy the following conditions:

1. The youth's disability classification was learning disabled, speech impaired, seriously emotionally disturbed or mildly/moderately mentally retarded.
2. The youth graduated or aged out of school.
3. The youth had a completed wave 2 school program survey form and was either in the 12th grade or in an ungraded program in the year for which the form was completed.

3 NONRESPONSE BIAS

Overview

The longitudinal nature of the NLTS and the multiplicity of its data collection instruments resulted in less than complete data for a number of individuals. Therefore, analyses that combined data from different instruments were necessarily performed on different subgroups of individuals. There is always the concern in this situation that the subgroup of individuals for whom the required data are available might be systematically different in some regard from the population that they were intended to represent. (For example, individuals who can be tracked longitudinally might have a higher socioeconomic status than those for whom contact is lost.) To adjust for some potential differences, the individuals in the analyses were weighted to represent the entire population to which they were intended to extrapolate. However, such an adjustment might not be completely successful. In this section, we examine the extent to which subgroups (as defined by the data collection instruments that were available for them) had different characteristics. This analysis is not intended to be definitive, because it is only by tracking down nonrespondents that one can conclusively establish differences that exist between respondents and nonrespondents. Rather, the analysis is intended to be suggestive of the magnitude of the differences that might exist.

Subgroups for Examining Nonresponse Bias

We begin by defining eight subgroups of respondents, based on the data collection instruments that were available for them:

- Group 1--All respondents with a wave 1 parent/guardian questionnaire with sufficient information to allow weighting in wave 1.
- Group 2--All respondents with a wave 1 parent/guardian questionnaire or a wave 2 parent Part C interview (which contained the background information contained in the wave 1 parent/guardian questionnaire). This is the broadest group containing all of the information used in this comparison, and is therefore the "baseline" group to which others should be compared.
- Group 3--All respondents with (1) a wave 1 parent/guardian questionnaire or a wave 2 parent Part C interview, and (2) a completed or partially completed wave 2 Part A (parent) interview.
- Group 4--All respondents with (1) a wave 1 parent/guardian questionnaire or a wave 2 parent Part C interview, and (2) a completed or partially completed wave 2 Part B (parent or youth) interview.
- Group 5--All respondents with (1) a wave 1 parent/guardian questionnaire or a wave 2 parent Part C interview, and (2) a complete or partially complete transcript or a completed school program content form.

Table 3

COMPARISON OF PARENT/GUARDIAN RESPONSES FOR YOUTH WITH DIFFERENT COMBINATIONS OF COMPLETED OR PARTIALLY COMPLETED DATA COLLECTION INSTRUMENTS

Response to Parent Questionnaire	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
Number of youth	7,390	8,098	5,725	5,892	5,840	4,396	1,041	6,026
Disability Category								
Learning disabled	13.9%	13.5%	13.8%	13.8%	14.1%	13.9%	**17.6%**	13.7%
Emotionally disturbed	9.2%	9.0%	8.2%	8.4%	8.4%	7.7%	8.9%	8.6%
Speech impaired	6.9%	6.7%	6.1%	6.2%	6.5%	5.9%	**11.2%**	7.0%
Mentally retarded	13.3%	13.4%	13.4%	13.4%	13.8%	13.3%	**19.0%**	13.0%
Visually impaired	10.4%	10.4%	10.8%	11.1%	10.7%	10.9%	**5.8%**	11.0%
Hard of hearing	9.6%	9.3%	9.8%	9.8%	9.9%	10.2%	**6.3%**	9.8%
Deaf	11.2%	11.1%	12.4%	12.1%	12.1%	13.1%	**5.9%**	11.8%
Orthopedically impaired	9.3%	9.0%	8.9%	9.1%	8.9%	9.0%	**7.1%**	9.4%
Other health impaired	6.2%	6.1%	5.8%	5.8%	5.7%	5.6%	5.1%	5.8%
Multiply handicapped	8.8%	8.6%	9.1%	8.9%	8.6%	9.0%	**12.1%**	8.7%
Deaf/blind	1.2%	1.3%	1.5%	1.4%	1.3%	1.4%	1.0%	1.4%
Male	61.0%	59.7%	**66.3%**	60.9%	60.5%	60.9%	63.6%	60.6%
Living arrangement								
Lives with parent	83.7%	81.0%	83.6%	83.5%	84.0%	85.8%	**90.6%**	85.3%
Lives alone	1.4%	1.8%	1.8%	1.8%	1.5%	1.5%	**.1%**	1.2%
Lives with spouse or roommate	2.9%	3.8%	3.8%	4.0%	2.9%	2.8%	**.1%**	2.4%
Lives with family member or friend	2.7%	2.9%	2.6%	2.6%	2.7%	2.4%	**1.3%**	2.7%
Lives in residential or boarding school	2.4%	2.6%	2.7%	2.7%	2.9%	2.9%	3.2%	2.6%
Lives in a college dorm	.5%	.7%	.9%	.9%	.7%	.9%	**.1%**	.5%
Lives in military housing	.1%	.2%	.2%	.2%	.2%	.2%	.0%	.1%
Lives in a supervised group home	2.0%	2.1%	2.3%	2.2%	1.7%	1.9%	1.8%	1.8%
Lives in a mental health facility/hospital	.5%	.6%	.5%	.5%	.3%	.3%	.2%	.2%
Transient, homeless, in a car	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%
Lives in a correction facility	1.4%	1.4%	1.2%	1.2%	1.0%	1.0%	1.1%	1.0%
Other	.3%	.3%	.3%	.3%	.3%	.2%	.2%	.3%

Table 3 (concluded)

COMPARISON OF PARENT/GUARDIAN RESPONSES FOR YOUTH WITH DIFFERENT COMBINATIONS OF COMPLETED OR PARTIALLY COMPLETED DATA COLLECTION INSTRUMENTS

Response to Parent Questionnaire	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
Ethnic background								
African American	23.0%	21.7%	19.2%	19.3%	21.0%	19.1%	18.5%	21.5%
White	61.3%	57.8%	63.9%	63.1%	62.1%	**66.2%**	**65.7%**	62.7%
Hispanic	10.0%	9.4%	7.9%	8.3%	8.9%	7.8%	8.2%	9.7%
American Indian or Alaskan Native	.8%	.8%	.9%	.9%	.9%	1.0%	1.2%	.8%
Asian or Pacific Islander	1.6%	1.4%	1.4%	1.4%	1.4%	1.5%	1.3%	1.5%
Other	.7%	.7%	.7%	.6%	.7%	.7%	.6%	.8%
School status								
Youth now enrolled in school	63.0%	62.2%	64.9%	64.9%	**71.0%**	**72.5%**	**99.8%**	67.2%
Graduated	21.8%	21.5%	22.9%	23.0%	21.0%	21.0%	**.0%**	22.4%
Aged out	6.4%	6.0%	5.9%	5.8%	2.5%	2.4%	**.0%**	3.5%
Dropped out	7.2%	7.1%	5.9%	5.9%	4.7%	3.8%	**.2%**	5.8%
Suspended/expelled	.6%	.5%	.3%	.3%	.4%	.3%	.0%	.5%
Postschool status								
Paid work outside home, school	50.5%	49.0%	52.8%	52.6%	50.8%	53.0%	**43.7%**	51.3%
Average hourly wage if paid	$4.10	$4.14	$4.17	$4.18	$4.10	$4.10	$4.12	$4.06
Any postsecondary education	20.5%	20.8%	**25.2%**	**25.4%**	23.1%	**27.1%**	11.3%	21.4%
Belonged to school or other group in last year	38.0%	36.7%	40.7%	40.5%	40.8%	**43.5%**	**47.5%**	40.2%
Functional abilities								
Self-care ability scale	10.99	10.97	10.92	10.93	11.02	10.97	10.83	10.98
Mental skills scale	12.98	12.98	12.90	12.92	13.02	12.95	**12.37**	12.96
Household-care ability scale	10.01	10.01	9.90	9.92	9.99	9.91	**9.47**	9.96
Lives in one-parent household	31.3%	31.3%	29.5%	29.8%	30.4%	28.8%	27.1%	30.4%
Head of household education is 11th grade or less	30.9%	30.3%	28.8%	29.2%	29.5%	28.1%	29.1%	29.9%
Household income								
Less than $12,000	23.6%	23.1%	20.7%	20.9%	22.1%	20.4%	20.5%	22.2%
$12,000 to $25,000	24.4%	23.9%	25.4%	25.4%	24.8%	25.6%	25.0%	24.9%
$25,000 or more	36.3%	35.8%	**43.0%**	**42.3%**	38.4%	**44.1%**	**41.7%**	38.3%
Income not provided	15.7%	17.2%	**10.9%**	**11.4%**	14.6%	**9.9%**	**12.9%**	14.6%

- Group 6--All respondents with (1) a wave 1 parent/guardian questionnaire or a wave 2 parent Part C interview, (2) a complete or partially complete wave 2 Part A (parent) interview, (3) a complete wave 2 Part B (parent or youth) interview, and (4) a complete or partially complete transcript or a completed school program content form. For all practical purposes, this is the group of youth for whom essentially complete data are available.
- Group 7--All respondents with (1) a wave 1 parent/guardian questionnaire or a wave 2 parent part C interview, and (2) a complete or partially complete school program survey.
- Group 8--All respondents with 1) a wave 1 parent/guardian questionnaire or a wave 2 parent part C interview, and (2) a complete or partially complete (wave 1 or wave 2) school background survey.

Table 3 contains the unweighted responses from these groups on questions contained in the wave 1 parent/guardian survey.

Similarities and Differences in Subgroup Responses

With the exception of group 7 (which includes only youth who were in school in 1990 to 1991), the groups were remarkably similar on all the responses to the parent questionnaire, as shown in Table 3:

- With respect to the distribution of disability categories, the only appreciable difference between the groups is that group 7 had relatively more youth classified as learning disabled, speech impaired, mentally retarded, or multiply handicapped, and relatively fewer classified as visually impaired, hard of hearing, orthopedically impaired, or deaf.
- With respect to gender, group 3 had slightly more males (66% versus 60% for group 2, which is the baseline group).
- Group 7 had more youth who lived with a parent (91% versus 81% for group 2) and correspondingly fewer youth who lived in more independent arrangements (i.e., alone, with a spouse or roommate, with a family member or friend, or in a college dorm).
- Groups 6 and 7 had slightly more youth who were white (66% and 66% versus 58% for group 2).
- Groups 5 and 6 had more youth enrolled in school (71% and 72%, versus 65% for group 2). By definition, essentially all members of group 7 were enrolled in school.
- Group 7 youth were slightly less likely to have paid employment (44% versus 49% for group 2).
- Youth in groups 3, 4, and 6 were slightly more likely to have had such postsecondary education (25%, 25%, and 27% versus 21% for group 2). Youth in group 7 were less likely to have any postsecondary education (11% versus 21% for group 2), which is to be expected, because they were still enrolled in secondary school.

- Youth in groups 6 and 7 were more likely to belong to a school group or other group in the last year, (i.e., 44% and 48% versus 37% for group 2).
- Group 7 was lower on the intelligence scale (12.37, versus 12.98 for group 2) and the household-care ability scale (9.47, versus 10.01).
- More youth from groups 3, 4, 6, and 7 belonged to households with incomes of $25,000 or more (43%, 42%, 44%, and 42% versus 36% for group 2). There was a corresponding reduction in the percentage of households that would not report their income (11%, 11%, 10%, and 13%, versus 17%), but relatively little change in the percentage of households with income levels below $25,000.

The differences in Table 3 are quite modest. This demonstrates that, given the presence of a wave 1 parent/guardian questionnaire or a wave 2 parent part 3 interview, the presence or absence of the other survey instruments (with the exception of the school program survey form) does not result in bias. We attribute the differences between group 7 and the other groups to the fact that the school program survey form was applicable only to youth who were in school in 1990-91 and youth in the in-school substudy (i.e., those classified as learning disabled, emotionally disturbed, speech impaired, or mildly/moderately mentally retarded and who left school, largely by graduating in 1988-89 or 1989-90). These youth were different, be design, from youth as a whole. Apparently, youth who remained in school were generally in the more severely disabled groups, were less capable with respect to intelligence and household care ability, came disproportionately from white families and families with higher incomes, worked less often for pay, had less postsecondary education, belonged to a school or other group more often, and tended to live more frequently with their parents and less frequently in more independent living arrangements.

The only other group that demonstrated even modest differences from the reference group (i.e., group 2) is group 6 (i.e., youth with essentially complete data). This group tended to be slightly more often Caucasian, enrolled in school, more likely to have postsecondary education, more likely to belong to a group, and more likely to have household incomes in excess of $25,000. For the most part, these are attributes that would tend to be associated with making it easier to obtain school records and to track parents and youth. However, these differences are not especially pronounced, and many of them (i.e., ethnicity, school completion status, and household income) were frequently used as weighting variables. Therefore, the act of weighting would substantially reduce even the small bias that appears to be associated with the presence of multiple survey instruments.

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